DELAWARE STEM COUNCIL

# STEM Council Quarterly Meeting

**December 8, 2014**
**Carvel Building; 820 N. French Street; Floor 10**
**Wilmington, DE**
**4:00-6:00 p.m.**
**NOTES**

**Attendance:**
*In person attendance:* Judson Wagner (Co-Chair), Teri Gray (Co-Chair), Daniel Suchenski (STEM Council Program Manager), April McCrae (DDOE STEM Coordinator), Luke Rhine (DDOE Director CTE and STEM Initiatives), Rita Vasta (NCCVT Associate Principal Delcastle High School), Ross Armbrecht (Delaware Foundation for Science and Math Education), John Singer (Brandywine School District CTE instructor), James Collins (Chief Information Officer DTI), Michelle Kutch (Brandywine School District, Curriculum Director)

*Phone attendance:* Dave Cadogan (ILC), Bill Morrow (Delaware Tech), Randy Guschl (DuPont/Retired), Doug Hicks (Delaware Tech/Retired)

**Call to order:**
The meeting was called to order at 4:10 p.m. Dr. Teri Quinn Gray addressed the STEM Council with opening remarks and a review of the evening's agenda. A .pdf document of the agenda is included as part of the meeting minutes documentation.

**STEM Strategy Committee Updates:**

Teri Gray discussed the STEM strategic planning activities that have occurred over the past few months:

- Jud Wagner and a small subgroup of the STEM Council began the strategic planning work by identifying consultants that would work as facilitators for subsequent strategic planning and investigation. The consultant company chosen was TIES (Teaching Institute for Excellence in STEM).
- The Consulting group worked to hold two design studios inviting STEM advocates from throughout the state to discuss STEM priorities for the Council. One studio was held at the University of Delaware, the other was held at Delaware State University.
- In addition to the large scale face-to-face design studios TIES conducted a detailed digital survey among STEM stakeholders achieving an approximate 80% response rating with 70% completion rate.

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- A final step in data gathering involved a series of deep dive interviews (30-40 minutes in length) of state CEO's, College Administrators, DOE Leadership and Leadership in other state agencies.
- A draft of the final strategic plan has been prepared for the strategy committee's review and was disseminated today (December 8, 2014) for committee comment. The draft includes a review of the original Executive Order, a review of past STEM Council achievements, descriptions of future goals and recommendations for the Council.
- A special meeting of the full STEM Council will be called in January for the release of the Strategic Plan Draft for Council consideration.

DISCUSSION:

John Singer asked if Teri Gray could share three overarching bullet points from the draft.

Teri Gray shared that the report revealed the following information:

- A perception from the public that the STEM Council was a hierarchical organization with limited diversity.
- A perception that the council communicates regularly but not to a broad enough audience and that greater communication would be appreciated.
- A perception that the council may not be sustainable with its current infrastructure being so deeply connected with one state organization (DDOE) and tied to the Governor's office.

Teri noted an additional perception was that there was a difficulty in finding a common language between higher education, business, informal educators (such as Boys and Girls clubs, YMCA, museums etc.) and K-12 education sectors barring a cross-cutting initiative. Creating a common language that integrated all sectors would be beneficial in future work.

Jud Wagner stated that working with TIES had been beneficial as the organization brought a perspective from outside of Delaware that was helpful in allowing the group to "HEAR" things that needed to be heard, but that may have been misunderstood without their assistance. The hard to hear information is imperative to helping the council move forward.

***Daniel Suchenski will send dates to STEM Council members to establish the January Draft release meeting early in the new year.***

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**Updates on NGSS:**

Tonyea Mead provided a brief reminder of the Next Generation Science Standards initiative in the state of Delaware telling the council that the new standards were adopted by the State Board in the fall of 2013 and were in the process of being implemented statewide. Some of the work toward implementation has included:

- Contractual agreements with Brett Moulding, Peter McLaren, Nicole Paulson, Rodger Bybee—all writers of the Next Generation Science Standards (NGSS). These consultants have been working with DDOE leadership and the Delaware Science Coalition to train district identified lead science teachers with how to utilize the Next Generation Science Standards and how to adapt existing curriculum using the three dimensional performance expectations found in the standards document. Financing for these contracts was made possible in part through corporate funding through DFSME.
- Teacher leaders currently meet monthly to work on curricular adaptation products to bring resources into alignment with NGSS.
- Brett Moulding is working specifically with Principals and other district administrators to help them understand the NGSS, what to look for in practice, and how the standards can be used in conjunction with literacy and mathematics standards expected from the Common Core State Standards to minimize quantity of "stuff" to be taught and increase the quality and rigor of instruction.
- Tonyea Mead also described leadership meetings for the planning and implementation of ongoing NGSS work. A specialized NGSS implementation committee including leadership from the Delaware Science Coalition, University of Delaware staff, DDOE staff, informal science education agencies, STEM Council representatives, business and PTA representation meets monthly to discuss and plan current and ongoing NGSS implementation strategies.
- The Delaware Science Coalition meetings have also been reorganized to maximize professional development for district leadership regarding the NGSS and to enhance planning and preparation at the district level. The meetings have been organized to include working subcommittees and embedded professional development to ensure that NGSS expectations and information is transmitted to leadership as well as the teacher leader level.
- Tonyea finished her update with an announcement that the DDOE site visits currently used to observe Common Core State Standards implementation for Math and ELA will be enhanced as of next year to include a review of NGSS implementation thus instilling an expectation for districts that NGSS is an imperative for student learning.

*Discussion:*

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Michelle Kutch made a comment about the last coalition meeting with the restructure of subcommittees during the official meeting time. She noted that this structure required active participation of all coalition membership, an expectation that has not previously been the norm. She also noted that multiple subcommittee members voiced a request to connect with the Gov. STEM Council and to create a relationship between the two organizations.

Ross Armbrecht commented that the energy of engagement at the last coalition meeting was greater than he has seen in a long time and that it was an exciting shift to observe. He also commented that the coalition had received input from a data driven report regarding how to rejuvenate the organization and that it would be good to revisit that document for continued upward momentum.

Teri Gray suggested that the council read (at least) chapter 5 of the coalition review for context. (REPORT ATTACHED)

Rita Vasta complimented the Teacher Leader program and its work with teachers who are returning to districts with materials for district in-service and/or professional learning committee professional development opportunities. She stated that she has witnessed great things and is excited by the work being done.

Michelle Kutch asked of the council—"Who gets the ask?" Does the science coalition get to ask the STEM Council for help and support or does the STEM Council approach the science coalition for help, support and/or connection? How will or does that work?

Teri Gray replied that this and questions like this were among those to be answered by the strategic planning committee and future work. Building relationships was among the future goals of the Council, but that a mutual "ask" and/or connection between organizations seemed the best path forward in partnership toward STEM success.

Teri Gray ended this conversation with a comment noting that the STEM Council needed to consider taking a bigger advocacy role in how to help with messaging and communication of things like NGSS and Common Core State Standards as a unit not a "one or the other proposition."

**Delaware STEM Educator Awards:**

Rita Vasta began by thanking Dan Suchenski and Randy Guschl for all of their hard work with fundraising.

> Randy Guschl commented that cooperation from corporations/companies throughout the state of Delaware to support the STEM Teacher awards was very high and that he felt that the group had just scratched the surface of what was possible in that arena.

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The event was held at the CHASE Riverfront center in Wilmington on November 17, 2014. DuPont donated gift bags for ALL teacher applicants and Delcastle high school prepared trophies for all first and second place winners. Delcastle also provided videography for the event.

A Survey Monkey review has been sent to all teacher participants and 10 of 24 have been returned to date. So far recipients have generally reported being pleased with the event with most stating that they would not reapply for the award but that they would recommend to others that they apply for the award.

Rita Vasta offered gratitude to all who helped make the event a success and especially thanked Daniel Suchenski for his ability to do ground work during office hours when most other STEM Council members were working.

Teri Gray reflected that the award process had gone through multiple committee processes prior to getting to the symposium finale. Committees included the rubric and design committee, the selection and process committee and then the award/symposium committee. The fact that three separate committees, made up of volunteers were able to organize, develop and pull off such a feat in such a short time was an amazing accomplishment.

Doug Hicks asked two reflective questions for the council's consideration:

1. Did the solicitation garner the types of applications that were desired?
2. Did the rubric allow the committee to grade the applications appropriately and to choose the best winner(s) for what we wanted to accomplish?

These questions received responses of "yes—but." April McCrae stated that because the solicitation went out and required immediate application there was no ability for teachers or teams to "adjust" or change their practices in accordance with the requirements of the award. Therefore, applicants had to have "already been doing what was asked." That said the applications were generally in line with what was asked. It is hoped that as years move along the applications become more profound and creative.

Further comments were made regarding the utilization of winning teams to advance the call of STEM throughout Delaware. Chief Information Officer Collins stated that he wondered if winners could be interviewed or videotaped providing highlights of best practices for others to view in professional development settings. Further discussion regarding how to highlight winners to advertise best practices ensued.

Teri Gray suggested that a debrief event be scheduled to capture further ideas from those who participated in preparing for the STEM Teacher Awards. Details for a debrief event will be provided at a future time.

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**JA It's My Future**:

Daniel Suchenski provided an update on the 6th grade Junior Achievement pilot of a national curriculum titled "JA It's My Future." The curriculum is provided for sixth grade students by Junior Achievement and is used to highlight job opportunities across the spectrum of career pathways. In the state of Delaware, the curriculum has been modified to highlight STEM careers and/or careers requiring STEM skills and is being delivered to students by volunteers currently working in STEM Careers. At this time, JA Delaware reports that the pilot has signed on with enough schools/districts to reach over 1750 students this year. There are currently 10 classrooms running the JA It's My Future Curriculum and JA is working right now to reach out to last minute volunteers to staff later classroom sessions.

A copy of the "JA It's My Future" Volunteer Flyer is attached.

**Computer Science White Paper:**

Jud Wagner reported to the group that he had traveled to NYC with Lori Polluck, and George Reissig to participate in an issues based round table concerning the state of computer science education in the US. The following is the abstract from the resulting white paper:

> *Across industries, businesses are expecting the next generation of employees to be "technology fluent": which means having a mastery of digital technology beyond the classroom, to solve real-life problems. Yet education is not delivering the skills needed to go from college to career, or from "skills to real." With 73 percent of new science, technology, engineering, and mathematics (STEM) jobs created from 2010 to 2020 projected to be in computer science (CS)[1], a serious skills shortage is developing. It is as if education and industry have stopped talking to each other.*
>
> *To address the challenge, Tata Consultancy Services (TCS), an IT services, consulting and business solutions organization, joined with STEMConnector, a leading advocacy organization for STEM education and careers, to host a Computer Science Round table on May 16, 2014, at the New York Academy of Sciences in 7, World Trade Center, New York.*
>
> *The round table built on the success of the executive round table on CS Education and Careers held at Washington, D.C., on September 6, 2013. This time, the focus was on how states and cities are advancing computer science education, what industry is doing to advance computer skills, and how we can identify, replicate and scale best practices resulting from these efforts. This white paper shares the insights and solutions that emerged from the daylong round table discussion.*

[1] "STEM 2.0: Innovation Critical for Workplace Skills Development," Edie Fraser and Tim Edwards, http://www.diplomaticourier.com/news/sponsored/1976-stem-2-0-innovation-critical

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-for-workplace-skills-development as retrieved on 6/25/14.

Hard copies of the white paper are available by contacting Jud Wagner

Jud Wagner opened conversation by asking the Council whether they felt that with all of the work that the council had taken upon itself, whether it was interested in taking on Computer Science/Integrated Technology (IT).

Chief Information Officer Collins stated that from his perspective every job out there required some level of computer literacy. He noted that the Governor had just announced that many of the employers in the state would be working together to find and hire computer technicians from diverse backgrounds due to the limited employment pool—so from his perspective it was imperative that our students have access to computer science.

Director of CTE/STEM Luke Rhine reiterated that the initiative that CIO Collins was referring to was called the IT Pipeline Network. This involves 30 or more Delaware employers working together in partnership with the Whitehouse to investigate new ways of hiring through nontraditional means. Citizens with certifications vs. college degrees are being considered for high wage jobs especially in the area of computer science and IT and employers are working together to help train them because their current pool of employees is so small that they are competing against one another for the same people. There are not enough employees for the number of available positions—therefore, alternate routes are being considered to provide citizens with the training necessary to qualify for these high wage positions—mostly in the area of IT. Considering this—it would be shortsighted to ignore computer science in the STEM conversation.

It was generally unanimous that computer science was a given in terms of the STEM conversation for Delaware.

**Adjournment:**

The meeting was adjourned at 6:14 pm. The next quarterly meeting of the Governor's STEM Council will be March 9, 2015 in Kent County. Please watch the Public Calendar for specific location.

## Next Generation Science Standards Background

The Next Generation Science Standards (NGSS) were developed through a collaborative state-led process. Twenty-six states (including Delaware) volunteered to work with the 41 members of the writing team to lead the development of the standards. State committees consisted of representatives from the K-12 education, education policy, scientific, post-secondary education, and informal science communities. As of July 2014, twelve states (including Delaware) and the District of Columbia have adopted the NGSS as their state science education standards.

## What the NGSS means for your business

- The NGSS will prepare students to enter the workforce with enhanced communication, problem-solving, and critical thinking skills as well as greater resilience—all essential skills for competing and succeeding in today's workforce.
- With the NGSS, students are required to provide evidence of their own learning, and to gain skills important for future employment such as communication, collaboration, and systems thinking.

## Science and Engineering Practices

1. Asking questions (for science) and defining problems (for engineering).
2. Developing and using models.
3. Planning and carrying out investigations.
4. Analyzing and interpreting data.
5. Using mathematics and computational thinking.
6. Constructing explanations (for science) and designing solutions (for engineering).
7. Engaging in argument from evidence.
8. Obtaining, evaluating, and communicating information.

## Cross-Cutting Concepts

They are common themes that are seen across all domains of science.

1. Patterns
2. Cause-Effect: Mechanism and Explanation
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter
6. Structure and Function
7. Stability and Change

## Disciplinary Core Ideas

An important role of science education is not to teach "all the facts" but rather to prepare students with sufficient core knowledge.

- Physical Science
- Life Science
- Earth and Space Science
- Engineering Design

**For More Information:**

**www.nextgen.science.org**

**www.DelExcels.org**

Delaware Department of Education
Science Department
302-735-4180

NEXT GENERATION SCIENCE STANDARDS
For States, By States

# Connecting the Business Community and Science Education

## Overview:

- The Next Generation Science Standards (NGSS) are a set of K-12 science standards developed by states, for states.
- The NGSS were benchmarked against countries whose students perform well in science and engineering fields, including Finland, South Korea, England, Japan and Singapore.
- The NGSS were built upon a vision for quality science education for ALL students—not just a select few.

## 21st Century Skills:

- By 2015, 60% of the new jobs being created will require skills currently being mastered by only 20% of the population. Job skills in science, technology, engineering, and mathematics (STEM) are among the skills experiencing the greatest increase in demand.
- The NGSS identify science and engineering practices and content that all K-12 students should master in order to prepare for success in college and 21st century careers.

## What the Business Community Can Do to Promote Science Education:

- Partner with a local school to encourage students to apply what they are learning in the science classroom to real-world situations, in the workforce, and marketplace. Help students connect their science education to their future.
- Consider submitting a letter to the editor of a local newspaper, submitting articles to business and/or education magazines, or blogs vocalizing support for the NGSS.
- Provide mentoring and offering financial resource support to STEM activities.
- Share relevant news and advocacy items on business engagement in science education through personal and professional social media channels.

## Why Science Education Matters Now More than Ever:

- Science—and science education—has a big impact on the daily lives of all Americans. We increasingly have to make informed decisions on issues ranging from healthcare to energy policy that affect ourselves, our families, and our communities.
- Students will not only face unprecedented competition in the workforce within their state and country but also from global markets.
- Science education helps students become resilient critical thinkers with the knowledge needed to become capable adults in a technology-driven world.
- Science education also creates greater adaptability and flexibility in students.
- Entry level workers in STEM fields will be better prepared for the work place.

Junior Achievement®

# JA It's My Future

Are you a Scientist? Or a Mathematician? Do you work in the technology field?
Maybe none of the above, but love working with kids and want to find a way to help?

## Then you are exactly what we are looking for!

Join us for a free informational session. To register, call Kalyca Stransky at 1-866- JA-TODAY or email kalyca.stransky@ja.org. **Lunch will be provided by JA.**

**November 18, 2014**
11:00 am - 1:00 pm
DuPont Stine Haskell Research Center
1090 Elkton Road, Newark DE 19711
Building 315

**December 11, 2014**
11:00 am - 1:00 pm
DuPont Chesnut Run Plaza
974 Centre Road, Wilmington, DE 19805
Building 730

**You're INVITED! Lunch & Learn**

# It's their future.
# Help us to send them in the right direction.

Junior Achievement of Delaware is seeking adult volunteers to help us present **JA It's My Future,** an innovative new program that provides local middle school students with practical information that will help prepare them for the working world. By offering your experience and expertise, **YOU** can help expose students to exciting career possibilities and teach them how to prepare for the future by understanding the concepts and developing the skills necessary to succeed.

Because we anticipate that the need for strong **STEM** (Science, Technology, Engineering and Mathematics) skills will only increase in the coming years, we will initially be focusing our recruitment efforts on **STEM** professionals and college students pursuing **STEM** degrees. Our goal is to recruit **500** volunteers to go into Delaware middle schools over the next two years.

**What is the time commitment?**
There are six specific lesson plans volunteers will present to students, each approximately 45 minutes long.

**Do I have to develop my own materials or will they be provided?**
Materials are provided and packaged in a self-contained kit that includes session specific, student-friendly information. Your job is to present that material and offer the personal insights and experiences that your education and career have afforded you.

**Is there training before I go into a classroom?**
Yes. There is in-person trainings to help prepare and acclimate volunteers.

**Do I have to be available for all six sessions?**
Most volunteers are available for all six sessions, but it is not required.

**Do I have to be a STEM professional to volunteer for the program?**
No. While we encourage **STEM** professionals to volunteer, it is not required that you work in a **STEM** field.

**How can I sign up?**
Please visit **JAdelaware.org** and select: the JA Its My Future tab.

## Go to JAdelaware.org today
## and make a difference in a student's life.

JA It's My Future

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# Stem Council Quarterly Meeting

**December 8, 2014**
**4:00 PM to 6:00 PM**

***Please Print Legibly!***

| Name | Signature |
|---|---|
| Judson Wagner | |
| RITA VASTA | |
| April McCrae | |
| Daniel Sudzenski | |
| JOHN SINGER | |
| Luke Rhine | |
| James Collins | |

Bill Morrow
Doug Hicks
Dave Cadogan
Randy G.
} Call-ins

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| Name | Signature |
| --- | --- |
| TERI QUINN GRAY | Teri Quinn Gray |
| Ross Arnbrecht | R. W. Arnbrecht, Jr. |
| Michelle Kutch | M. Kutch |
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